## Intermediate Mathematics Provincial Assessment 2008

Last Name: $\qquad$ First Name: $\qquad$ MI: $\qquad$
Teacher:

School Name: $\qquad$ School District:

## IMPORTANT

You will have to complete your name and school information in three places:
(1) On this sheet (above)
(2) On the bubble sheet
(3) On the cover of your Student Booklet

Please ensure the information in each of these places is completed correctly and clearly. Your bubble sheet will be placed inside this Section 1 Insert for mailing so pay particular attention that the bubble sheet and Insert information are correct.

## Section 1: Non-Calculator Section

You will need a pencil, paper, and ruler for this section but you are not permitted the use of a calculator.

Questions, 1-7 require you to write, draw, or graph your responses in the space provided in this booklet. Do not use your bubble sheet for these questions. Section 1 should take about 20 minutes.

Your teacher will collect Section 1 when everyone is finished and will then give you Section 2. You will need your bubble sheet for Section 3 only.

1. Factor completely: $6 x y^{3}-4 x^{2} y$
2. Calculate $\left(7 \times 10^{-5}\right) \times\left(8 \times 10^{12}\right)$ expressing your answer in scientific notation.
3. Solve: $\left(4 x^{2}-7 x+5\right)+\left(-3 x^{2}+2 x+5\right)$
$\qquad$ out of 1 mark
4. Using the axes provided, graph the line having slope of 4 and a $y$-intercept of -2 .

5. Solve: $-2 x+1<9$
6. Solve: $-2 x+8=3(4-2 x)$
7. Calculate: $\frac{-2}{3}+\frac{3}{4} \times 3$

## Intermediate Mathematics Provincial Assessment 2008

Last Name: $\qquad$ First Name: MI: $\qquad$
Teacher:

School Name: $\qquad$ School District: $\qquad$

IMPORTANT

You will have to complete your name and school information in four places:
(1) On Section 1 and 2
(2) On the bubble sheet
(3) On the cover of your Student Booklet

Please ensure the information in each of these places is completed correctly and clearly.

## Section 2: Written Response Questions

You will need a pencil, paper, and ruler for this section. You are permitted the use of a calculator.
Questions, 8-11 require you to write, draw, or graph your responses in the space provided in this booklet. Do not use your bubble sheet for these questions. Section 2 should take about 20 minutes.

Your teacher will collect Section 2 when everyone is finished and will then give you Section 3 (a larger work booklet containing the rest of the questions). You will need your bubble sheet for Section 3.
8. John drew similar triangles to find the distance across a river, $A B$.

a) Write a similarity relation
b) Create and solve an equation to determine the distance across the river.
$\qquad$
9. Water was heated for 4 minutes with the temperature being recorded every 1 minute.

| Time (minutes) | Temp. $\left({ }^{\circ} \mathrm{C}\right)$ |
| :---: | :---: |
| 0 | 18 |
| 1 | 21 |
| 2 | 24 |
| 3 | 27 |
| 4 | 30 |

a) Plot the data from the table and draw a graph.

|  |  |  |  |  |  |  |  |  |  |
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b) Calculate the slope of the graph above.
c) What is the y-intercept and what does it represent?
10. Determine the area of the shaded region for the figure shown in simplest form.

11. Your class is filling a time capsule. Its ends are semi-spherically shaped. How much can the time capsule hold (to the nearest $\mathrm{cm}^{3}$ )?

12. Which set notation represents this graph?

(A) $\{x \mid-2 \leq x \leq 3, x \in R\}$
(B) $\{x \mid-2<x<3, x \in R\}$
(C) $\{x \mid-2 \leq x \leq 3, x \in I\}$
(D) $\{x \mid-2<x<3, x \in I\}$
13. Which statement is true?
(A) If a number is an integer then it is also rational.
(B) All integers are whole numbers.
(C) The number $3 \pi$ is rational.
(D) There is a number that is both rational and irrational.
14. Which number is between 4 and 4.5 ?
(A) $-\sqrt{20}$
(B) $\sqrt{15}$
(C) $\frac{17}{4}$
(D) $4 \frac{2}{3}$
15. Which radical could be represented by point $X$ on the number line?

(A) $\sqrt{10}$
(B) $\sqrt{15}$
(C) $\sqrt{17}$
(D) $\sqrt{22}$
16. Which matrix represents the amount of stock on hand after a new order was received on July $31^{\text {st }}$ ?

|  | Stock on Hand July 1 |  | July Sales |  | Stock received |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Large | Small | Large | Small | Large | Small |
| Ice cream | [2 | 15 |  |  | [15 | 27 |
| Frozen yogurt |  |  |  |  | 8 | 19 |

(A) $\left[\begin{array}{ll}10 & 1 \\ 15 & 5\end{array}\right]$
(B) $\left[\begin{array}{cc}17 & 2 \\ 13 & 30\end{array}\right]$
(C) $\left[\begin{array}{ll}25 & 28 \\ 23 & 24\end{array}\right]$
(D) $\left[\begin{array}{ll}47 & 56 \\ 29 & 68\end{array}\right]$
17. There are $2 \frac{3}{4}$ cups of flour in a recipe for one dozen oatmeal cookies. How many cups of flour are needed for $6 \frac{1}{2}$ dozen cookies?
(A) $\frac{11}{26}$
(B) $4 \frac{1}{2}$
(C) $12 \frac{3}{8}$
(D) $17 \frac{7}{8}$
18. Calculate: $\left(7^{4}\right)^{5} \times 7^{9}$
(A) $7^{1}$
(B) $7^{18}$
(C) $7^{29}$
(D) $7^{81}$
19. Simplify: $\frac{a^{6}\left(a^{4}\right)^{0}}{a^{-4}}$
(A) $a^{2}$
(B) $a^{6}$
(C) $a^{10}$
(D) $a^{14}$
20. Which diagram represents the product of $(x-3)(x-2)$ ?
(Note that shaded tiles are designated as positive and clear tiles as negative.)
(A)

(C)

21. Find the quotient when $6 x^{5}-9 x^{4}+12 x^{2}$ is divided by $-3 x$.
(A) $-2 x^{4}+3 x^{3}-4 x$
(B) $-2 x^{4}-9 x^{4}+12 x^{2}$
(C) $2 x^{4}-3 x^{3}+4 x$
(D) $6 x^{5}+3 x^{3}+12 x^{2}$
22. Expand: $(-5 x)\left(x^{2}-4 x-3\right)$
(A) $-5 x^{3}-20 x-15 x$
(B) $-5 x^{2}-4 x-3$
(C) $-5 x^{2}+20 x+15$
(D) $-5 x^{3}+20 x^{2}+15 x$
23. The graph shown represents the cost of renting a boat over time. What is the hourly charge to rent the boat?

(A) $\$ 1.00$
(B) $\$ 4.00$
(C) $\$ 20.00$
(D) $\$ 40.00$
24. Simplify.

$$
\frac{4 x^{3}+8 x}{2 x}
$$

(A) $2 x+4$
(B) $2 x^{2}+4$
(C) $2 x^{2}+4 x$
(D) $2 x^{2}+8 x$
25. If the pattern continues, how many line segments would be used if there are 15 dots in the diagram?


Diagram 1


Diagram 2


Diagram 3


Diagram 4
(A) 9
(B) 15
(C) 27
(D) 30
26. What type of relation is represented by the data table?
(A) linear
(B) parabolic
(C) exponential
(D) none of these

| $X$ | $Y$ |
| :--- | :--- |
| 1 | 8 |
| 2 | 4 |
| 3 | 2 |
| 4 | 1 |
| 5 | $\frac{1}{2}$ |

27. What is the slope of the line passing through the points $(-4,3)$ and ( $5,-3$ )?
(A) $\frac{-3}{2}$
(B) $\frac{-2}{3}$
(C) $\frac{2}{3}$

(D) $\frac{3}{2}$
28. The perimeter of a rectangle is 72 m . The length is 4 m more than three times the width. What is the length of the rectangle?
(A) 8
(B) 17
(C) 28
(D) 55
29. A square prism has a volume of $660 \mathrm{~cm}^{3}$. What would be the volume of a square pyramid that has the same base area and height as a square prism?
(A) $165 \mathrm{~cm}^{3}$
(B) $220 \mathrm{~cm}^{3}$
(C) $330 \mathrm{~cm}^{3}$
(D) $660 \mathrm{~cm}^{3}$
30. The plastic mold shown is used to make frozen juice treats. How many millilitres of juice is used to make each treat?
(A) 39
(B) 118
(C) 156
(D) 390

31. Calculate: $0.75-\left(\frac{1}{4} \div \frac{3}{8}\right)$
(A) $\frac{1}{12}$
(B) $\frac{1}{2}$
(C) $\frac{21}{32}$
(D) $\frac{4}{3}$
32. For which transformation is orientation not maintained?
(A) dilatation
(B) reflection
(C) rotation
(D) translation
33. Which condition could be used to show that the triangles shown are congruent?

(A) AAA
(B) ASA
(C) SAS
(D) SSS
34. Given the diagram, which statement must be correct?

(A) $\frac{P R}{K H}=\frac{P T}{K T}$
(B) $\frac{R T}{H T}=\frac{P T}{K H}$
(C) $\frac{P T}{H T}=\frac{R T}{K T}$
(D) $\frac{P R}{K H}=\frac{T H}{T R}$
35. What is the value of $X$ in the diagram below?
(A) 4
(B) 6
(C) 8
(D) 12

36. Two triangles are similar and congruent. What are the ratios of their corresponding sides?
(A) $1: 1$
(B) $1: 2$
(C) $2: 1$
(D) $1: 3$
37. A point $(-1,4)$ is reflected in the $y$-axis and then rotated $90^{\circ}$ clockwise about the origin. What will be the final coordinates of the point?
(A) $(-4,1)$
(B) $(-1,-4)$
(C) $(1,4)$
(D) $(4,-1)$

38. The dilatation $(x, y) \rightarrow\left(\frac{1}{2} x, \frac{1}{2} y\right)$ is applied to a figure and is followed by the translation $(x, y) \rightarrow(x+4, y-3) . \mathrm{P}(10,-4)$ is a vertex on the original figure. What are the coordinates of $P^{\prime \prime}$ of the image under these transformations?
(A) $(9,-5)$
(B) $(9,-1)$
(C) $(7,3.5)$
(D) $(14,-7)$
39. What is a good estimate of the slope of the line of best fit for the following data?

(A) $\quad-3$
(B) $\frac{-1}{3}$
(C) $\frac{1}{3}$
(D) 3
40. Which scatterplot has the weakest negative relationship?

(A) A
(B) B
(C) C
(D) D
41. A family is expecting triplets. Which of the following can be used to determine the probability of having three girls?
(A) flip 3 coins
(B) roll 3 dice
(C) spin a 3 coloured spinner
(D) toss 3 paper cups
42. A student was asked to spin the spinner two times to win a prize on each spin. What is the probability of winning two milk?
(A) $\frac{1}{16}$
(B) $\frac{1}{8}$
(C) $\frac{1}{4}$
(D) $\frac{1}{2}$

